

Applicant: Michael Odell
Application No.: 10/054,349
Art Unit: 1731

Remarks

Claims 1-21 remain pending in the application. In the Office Action dated February 20, 2003,

Claims 1-21 were rejected as obvious over *Meinecke et al.* (US 5,141,600) or *Bück et al.* (US 5,389,206), each in view of *Calehuff et al.* (US 3,066,068).

Meinecke et al. teaches a blade gap former with a twin-wire section comprising two curved suction boxes inside a first wire loop and a deflector inside a second wire loop at a location where the two wires travel unsupported from the lower suction box to the upper suction box.

Bück et al. teaches in Fig. 4 a blade gap former with two suction boxes arranged in the loop of a lower wire and an individual strip arranged in the loop of an upper wire in the region between the two suction boxes, said strip being a part of a vacuum chamber.

Both documents teach placing a deflector or water removal strip opposite to a vacuum-free zone formed between two suction boxes.

Contrary to the prior art applied by the examiner, the claimed invention teaches that the loading blade is placed against a dewatering box that includes at least one vacuum-free zone that is preceded and followed by a vacuum zone. Thus the main difference between the present invention and the cited documents is that in the present invention the vacuum-free zone forms an integral part of the dewatering box.

The examiner suggests that it would have been within the level of ordinary skill in the art to integrate the two suction boxes of *Bück et al.* into a single partitioned suction box as exemplified by *Calehuff et al.* *Calehuff et al.* discloses a Fourdrinier machine comprising alternate vacuum chambers and chambers with a controllable substantially higher absolute pressure. Each chamber is provided with pressure regulation and the alternate chambers are joined together to form an integral dewatering area within the loop of the Fourdrinier wire.

In general, the technology used in a Fourdrinier machine is different from the technology used in a twin-wire former. For example, a Fourdrinier machine does not allow placing a loading blade opposite to a vacuum free zone. Furthermore, there is no suggestion or motivation in any of

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the cited documents to combine the totally different teachings.

Both *Meinecke et al.* and *Bück et al.* have deliberately chosen to employ separate suction boxes with an atmospheric zone arranged between the suction boxes. No pressure regulation is needed in these atmospheric zones. The person of ordinary skill in the art would not consider using the Fourdrinier construction of *Calehuff et al.* in a twin-wire former. Even if the person of ordinary skill in the art were to apply the teaching of *Calehuff et al.* in a twin-wire former, they would provide each of the alternate chambers with pressure regulation. Thus the solution would be more complicated than that of the present invention.

The twin-wire former of the present invention comprises an integral suction box containing at least one vacuum-free zone arranged between two vacuum zones. Integrating the vacuum-free zone within the same dewatering device with the vacuum zones makes it easier to collect water removed from the web by the loading blade in the area between the two vacuum zones. The invention also permits a shorter former construction than that of *Meinecke et al.* or *Bück et al.* since separate suction boxes usually need more space than an integral suction box containing alternate vacuum and vacuum-free zones. In addition, providing two separate suction boxes is much more expensive than providing one suction box with alternating zones.

In *Meinecke et al.* and *Bück et al.* the first suction box is so long that the following deflector does not provide the advantages sought for in the present invention. Due to the length of the suction box, the deflector does not sufficiently improve the formation of the web. By means of short vacuum zones and a loading element inside the opposite wire loop in a vacuum-free zone between two vacuum zones, the formation of the web can be considerably improved without markedly increasing the porosity of the web.

The invention combines characteristic features of known dewatering elements in a totally new way, so that by means of the new twin-wire former it is possible to simultaneously achieve good formation produced by the loading blades and moderate paper porosity produced by the suction forming shoe. The prior art of record taken as a whole does not provide a suggestion or

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motivation or reason for doing what applicant has done. In the absence of such a suggestion or motivation to combine the references, a *prima facie* case is not made out.

The prior art is not addressing the problem solved by applicant—that of improving the formation of the web without increasing porosity an undesirable amount. The inventions of dependent claims 6 and 13, which specify a pre-loading blade before the dewatering box, are not shown in or suggested in the art cited by the examiner, nor has this feature been discussed by the examiner in the office action. Claims 7, 14 and 19 specify a preloading blade at the beginning of the dewatering box, the examiner has not addressed or developed prior art relating to this feature. The features of the depending claims illustrate that the references cited by the Examiner do not suggest the claimed invention.

Applicant believes that no new matter has been added by this amendment.

Applicant submits that the claims, as amended, are in condition for allowance. Favorable action thereon is respectfully solicited.

Respectfully submitted,



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